Gas Journal

VOL. 303. 112th YEAR. LONDON, JULY 13, 1960. No. 5854. PRICE 1/6

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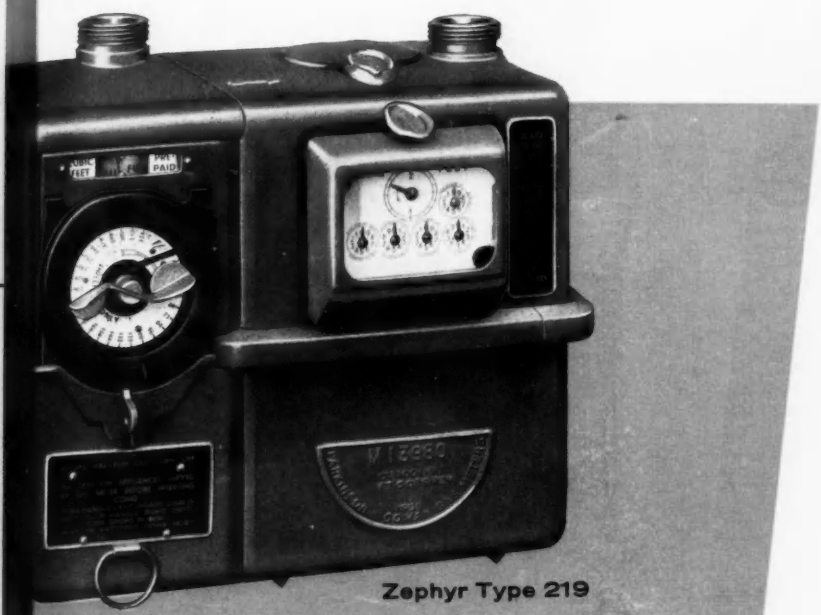

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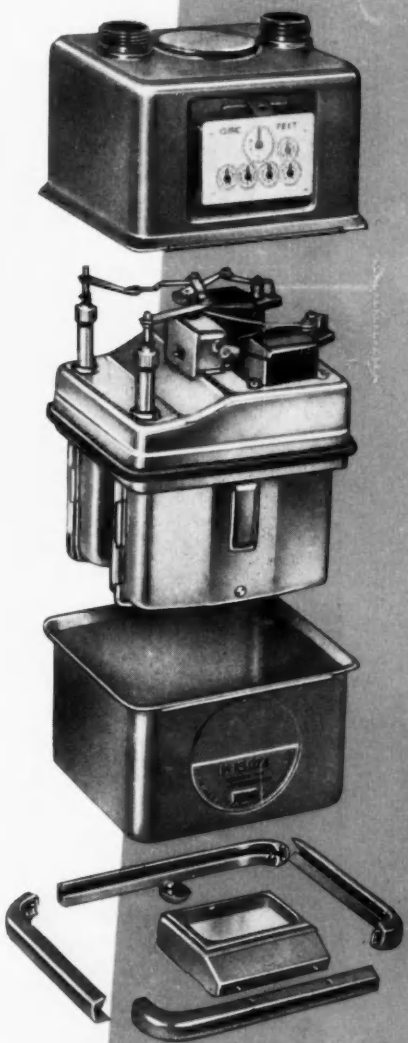

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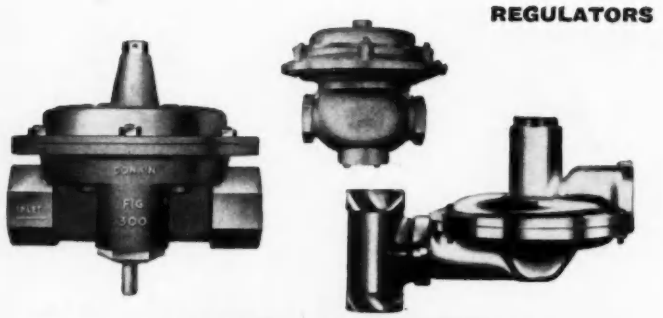

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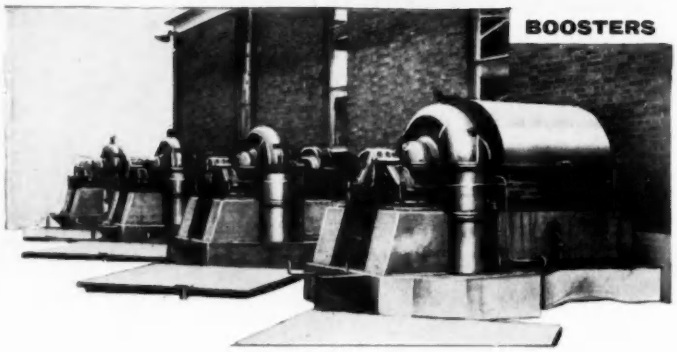

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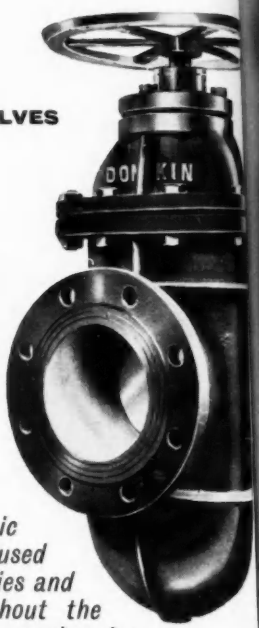

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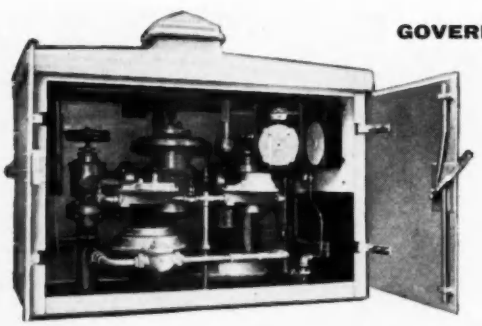

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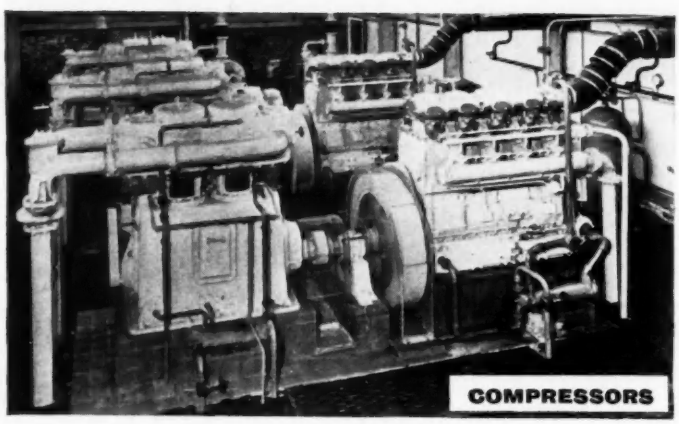

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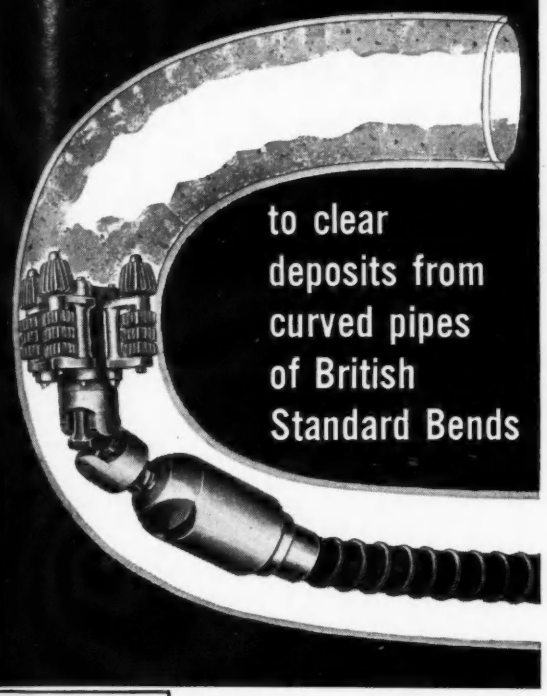

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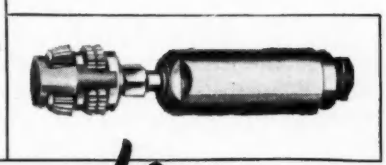

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Gas Journal

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WEDNESDAY, JULY 13, 1960

CONTENTS

EDITORIAL COMMENT

Building the House Heating Load - - - - 55
New Attitudes Needed - - - - - - - 56

SPECIAL ARTICLE

The Soviet Gas Industry - - - - - - 57

97th ANNUAL GENERAL MEETING INSTITUTION OF GAS ENGINEERS

The Development of the Industrial Gas Load in Scotland. By A. Higgs and R. W. Deans - - 59

NEWS SUPPLEMENT

North Western Board Should Make Big Profit in 1962 71
Clean Air Society Warn Against Efforts to Boost Raw Coal - - - - - - - - 71
Russian Engineers Report on Gas Deposits for Brazilian Company - - - - - - - - 72
Architects to Design All-gas Show House - - 72
Recognition for Safe Drivers - - - - - - 72
Cash Awards to Board Employees - - - - 72
Coming Events - - - - - - - - 72
Personal Notes - - - - - - - - 73
Obituary - - - - - - - - - 73

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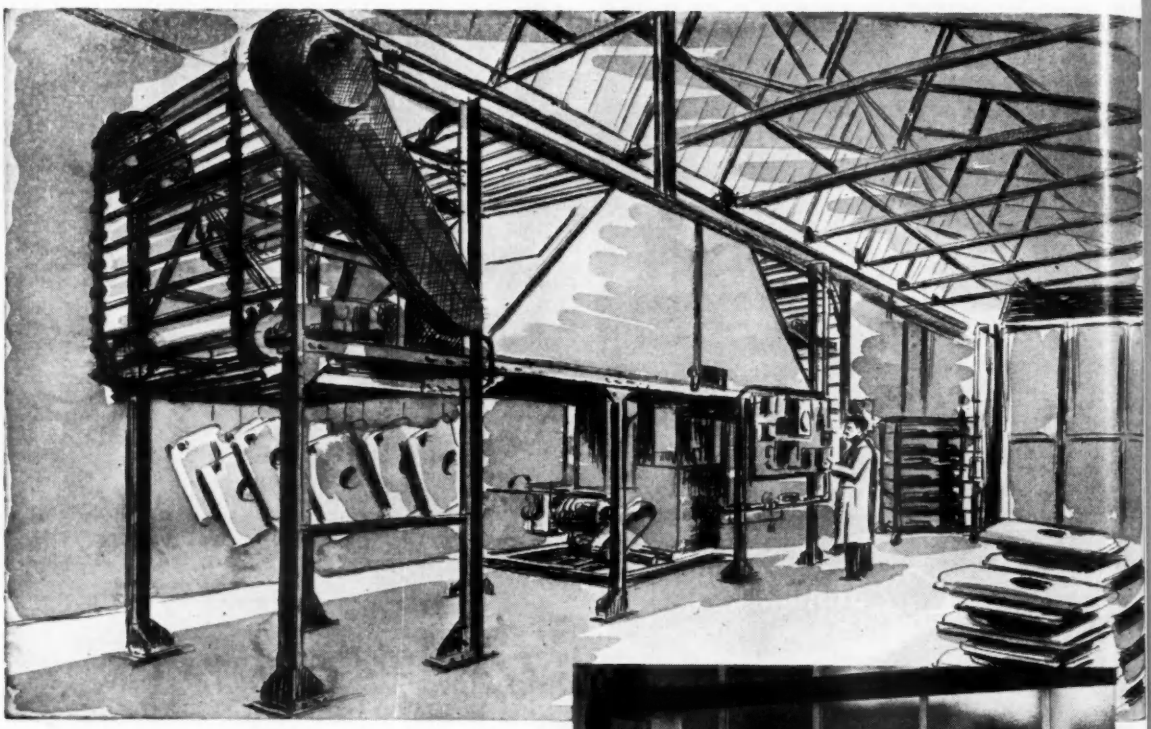

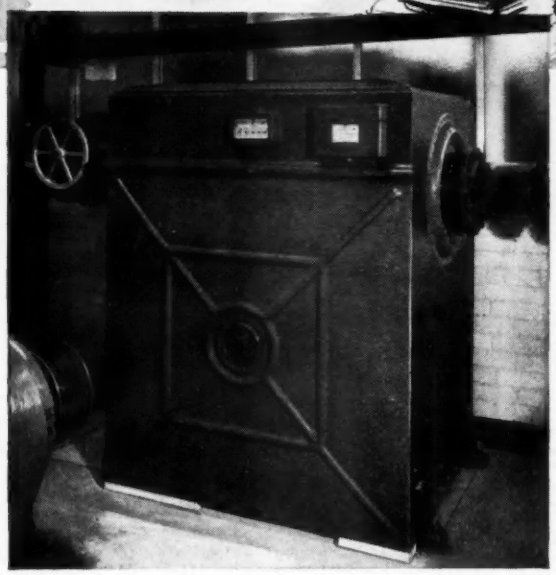

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Gas Journal

COKE OVENS • BY-PRODUCTS • CHEMICALS

Building the house heating load

WITH a cooker load that is tending to decline, the gas industry's attention is focusing to an ever increasing extent on house heating, particularly the use of small-bore central heating and fanned warm air equipment. The market is ripe for development, the appliances are technically sound and available in variety, and tariffs are sufficiently competitive to make gas attractive to thrifty householders. All that remains is to ensure that the gas boards themselves have enough trained sales personnel to take advantage of the situation. A considerable amount of work has been done in the industry to fit men for selling installations of this kind and to encourage dealers to promote gas rather than advocate the deceptive delights of oil. But short of reporting and encouraging, nothing has been done to further this new market by the industry's technical Press—until now, that is. For the July issue of *Gas Service* is devoted almost exclusively to this matter of whole house heating and, we like to think, it is something which must on no account be missed by anyone concerned with the building of this highly desirable load.

The issue opens with an introductory article by Mr. L. W. Andrew, Director of the Watson House Centre, who is very explicit concerning the advantages of gas in relation to (for example) electric floor warming, and who stresses the need for specially-trained staff to contact public architects and heating contractors at an early stage in planning when the merits of fuels are being considered. 'Technically speaking,' he says, 'the position is very promising but it is evident that the successful development of our new loads can only come if all installations are (1) well chosen, (2) correctly installed, (3) serviced regularly and properly, and (4) used properly by the occupant who may not initially be familiar with the equipment. If these conditions are met, the recommendations of satisfied users will result in a demand which will transform the present pattern of domestic gas consumption.'

As we have said, the issue deals both with small-bore systems using gas-fired boilers and with gas-heated fanned warm air systems. Leading the contributors in the former category is Mr. E. G. Brooks, Managing Director of Thomas Potterton Ltd. whose theme is the potential market. He anticipates that for the next five years there will be an expansion of 25% for each succeeding year over the previous one; in other words, that by 1964 the demand will be more than three times the 1959 level. He shows that the revenue from the sale and installation of a boiler is likely to be equalled by the revenue from the sale of gas burnt in the boiler well within the first year of use. 'In other words, one small domestic gas-fired boiler when installed is worth at least 12 cookers as far as gas load building is concerned.'

Mr. Brooks lays considerable stress on the need for 'a real selling service' for 'gas for central heating must be sold and selling is itself a service. It is service that the customer gets when the enquiry is handled quickly and efficiently in the showroom, when a knowledgeable salesman calls at her home to answer her questions and discuss her requirements, and when a reasonable estimate is submitted quickly. This service will make your sale, lack of it will break your sale.' Such a service, he believes, 'could make good all losses in gas load that have been made in recent years . . . and could soon have the sales side of the gas industry back where it belongs, with the reputation of being second to none.'

We must not lose sight of the fact that a significant proportion of gas-fired boiler sales will be—and, indeed, are—made by builders' merchants. This section of the trade has of course fallen heavily for the blandishments of the 'oil boys,' and it was to find out whether the outcome of this association had been as attractive as

had been thought at the outset that we asked the manager of the boiler section of one of the largest builders' merchants in the country for his views. His answer, which appears in the form of a very lively article, makes it clear that the worry and cost resulting from after-sales service on oil boilers inclines the merchant to look more favourably on the merits of gas. Clearly, however, a good deal more liaison between merchant and gas board is desirable if this is to become a truly profitable partnership.

Another article points out that although gas-fired boilers have elaborate controls fitted to achieve the utmost economy in operation, it is the heat emitter which actually provides the standard of comfort. In other words, radiators are important and can give the best results only when they are tailored to meet the exact requirements of the householder. The subject appears to receive somewhat scant attention in some gas circles and we hope that this essentially practical article by Mr. A. C. Hazel, Managing Director of Hurseal Ltd. will be widely read. As he says, 'A tailored heating system does not mean more expense; it invariably means lower running costs.'

So much for boilers and their appendages—what of the gas industry's other potential winner, warm air heating? Here the subject is dealt with by one of the country's leading experts, indeed a pioneer in this field. Mr. Crawford Sugg, Director of William Sugg Ltd., has been responsible for selling thousands of his Halcyon heaters and his approach is that of the down-to-earth engineer who by trial and error has perfected a technique in applying this kind of heater to all kinds of property. In a seven-page illustrated article he commits that experience to paper for the benefit of the gas salesmen who will be building up the sales of warm air appliances in the months to come. There are references to the technique of introducing these appliances in a new district, to accommodating them in tall buildings and to demonstrating them in action, but basically this is an account of how best to ensure their installation to the best advantage wherever the circumstances are propitious.

Other features include an article written from the viewpoint of the fitter, an account of the installation of Halcyons in existing property, and an eight-page supplement on some of the best appliances on the market. We believe that we have really hit the jackpot this time with a fully comprehensive survey of the industry's most rewarding potential load, published just as plans are being drawn up for a major national campaign.

New attitudes needed

IN spite of an increase in the number of smoke control areas in Britain last year, says the National Society for Clean Air in its *Clean Air Year Book*, 'the total acreage continues to be disappointingly small when compared with the target set by the Beaver Committee.' Some of the reasons for this sad state of affairs can be found in the different sections of the year book itself.

The Society's Annual Report expresses serious concern at the 'organised publicity and pressure campaign to obstruct the implementation of the Clean Air Act' by preventing smoke control areas being set up in districts considered 'presumably by the coal merchants' not to need cleaner air.

The second point is the contradiction between the amount of the nation's money that literally goes up in smoke every year (direct costs of pollution, £152.2 mill.; loss of efficiency £100 mill.; value of fuel lost, £250 mill.) and the amount of money given the Society to fight against this: Its annual income for 1959 was well under £15,000.

A direct reference to its small finances is made by the Society when it refers to taking against those obstructing the Clean Air Act 'such action that its more limited resources permit.'

The Society dates the beginning of the struggle against air pollution to 1273, when the use of coal was prohibited in London as prejudicial to health. The attitude of the merchants of 1273 (and of their descendants whose products 'greatly greved and anoyed' Queen Elizabeth I) was probably 'Damn thee Jack'!

One can sympathise with the merchants of those days—perhaps the laws passed against the use of coal militated against progress. But today, when more economical and less harmful fuels are available and when the coal industry itself is producing excellent solid smokeless fuels, one can only condemn them. The Year Book rightly points out that those who choose obstruction rather than adaptation to change and reform bring failure and added difficulties upon themselves.

While it is not difficult to understand why a small section of the community should act in this anti-social way it is more difficult to understand the stingy attitude of the nation to a body acting in its own interests; £15,000 a year is less than a fleabite. Is there not a case here for direct assistance from the Exchequer, at least for the Society's headquarters' fund appeal?

The Beaver Committee on Air Pollution in 1956 made recommendations aimed at reducing the total smoke in all heavily populated areas by 80% within ten to 15 years. If this is to be achieved, the two attitudes we have mentioned above—opposition to progress by a minority and lack of serious public support for a wholly valuable organisation—need to be recognised as belonging to the *laisser faire* 19th century rather than the socially-conscious 20th.

The unfortunate truth is that, such is the plight of the National Coal Board, only external pressure is likely to be successful in creating the necessary revulsion against the use of raw coal in the grate. When Mr. Robens takes office as Chairman of the N.C.B. his chief concern will be for the future of the coal industry; he may well leave the question of a smokeless Britain to the indifferent gods, knowing full well that the establishment he leaves behind him is at present committed to non-interference.

SOVIET GAS INDUSTRY

- *Problems of natural gas supply*
- *Interlinking gas grid mains*
- *Gases/solid carbon interaction*

WITH the development of the gas industry in the Soviet Union comes speculation by Western gas engineers of how the vast projects of bringing natural gas from the gas wells of the Caucassus to the industrial and heavily populated cities in European and Asiatic Russia will be achieved. Any information about the Soviet gas industry is therefore of particular interest. In the February issue of *Gazovaja Promyshlennost*, the journal of the Soviet gas industry, Dr. Karpor describes gas supply schemes for industrial undertakings.

The large-scale conversion of works in the U.S.S.R. to gas fuel, says the author, required great quantities of steel pipes and fittings. For the conversion of 210 works in the Leningrad district alone, 18,350 tons of pipes and 78,100 valve fittings were needed. The choice of the most rational and economical gas supply lay-out within the works has received little attention in Soviet literature so far, but it is now discussed on the basis of gas of a calorific value of 790 to 830 B.t.u. per cu.ft. and on the experience at 35 works, the hourly gas consumption at which ranges from an average of 3,500 cu.ft. to 266,000 cu.ft. Illustrated diagrammatically in Fig. 1 are the four principal groups into which the supply systems within these works can be divided. For the supply from the feed point to the various shops, the author prefers an above-ground installation for reasons of greater safety (gas leakage), diminished corrosion hazard and better supervision. A comparison for 6-in. and 8-in. diameter mains, including pipe laying, shows that underground mains cost 2½ to 3 times more per ft. run than above-ground mains. The 35 works under investigation had some 50% of their inter-works mains underground and the detailed investigation shows that with a completely above-ground installation a reduction of costs for the pipes alone of 1 mill. roubles (from 2.2 mill. to 1.26 mill.) would have been possible, representing about 8% of the total cost of the whole installation. The gas governors may be located at the entry to the various workshops as in version No. 1, (see Fig. 1). Since this arrangement helps in the stability of operation of the gas-burning equipment, allows a wider range of selection of burners, and evens out the load curve for the regulator, it is to be recommended. In version No. 2, a central governor installation serves all the shops, and gas-burning equipment has been calculated for equal pressures. The gas pressure readings are taken at a central spot. In version N. 3, additional local governors are placed in each shop or group of shops. Version No. 4, in which the governor is placed in the nearest shop, is not popular because gas consumption in this first shop affects the pressure in the other shops downstream. A detailed comparison of the three first

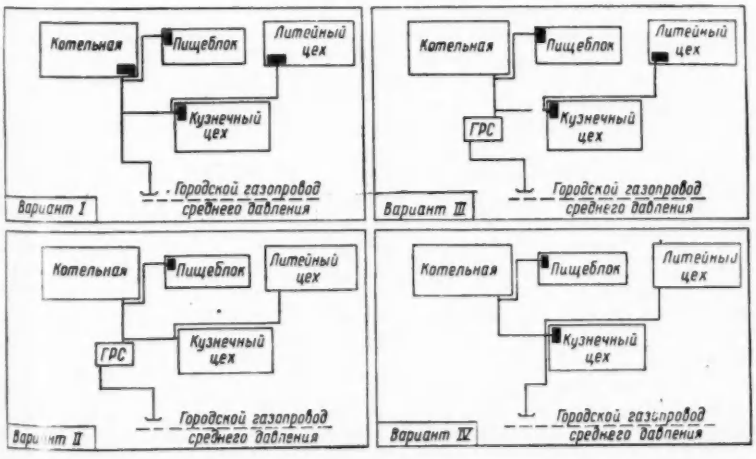


Fig. 1.

Top left square
Top line: Boiler house—canteen—foundry. Centre: Forge. Bottom: Version No. 1. Town gas main at medium pressure.

Top right square
Top line: Boiler house—canteen—foundry. Centre: Gas governor in separate building—forge. Bottom: Version No. 3. Town gas main at medium pressure.

Bottom left square
As Version No. 3, except: Bottom: Version No. 2.

Bottom right square:
As Version No. 1, except: Bottom: Version No. 4.

versions was carried out for an engineering works with the following gas requirements per hour: Boiler house 63,500 cu.ft., foundry 15,900 cu.ft., forge 3,500 cu.ft. and works canteen 1,700 cu.ft. Version No. 1 made possible the smallest inter-shop pipe diameters and the lowest total costs for equipment and labour for constructional work; version No. 2 was 8% and version No. 3 14% dearer.

* * *

IN the same issue V. I. Chalatin, V. A. Kondrashev, S. F. Barmin and J. M. Magazanik discuss the advantages to be gained from the interlinking of gas grid mains.

Referring to Fig. 2, the authors point out that if the

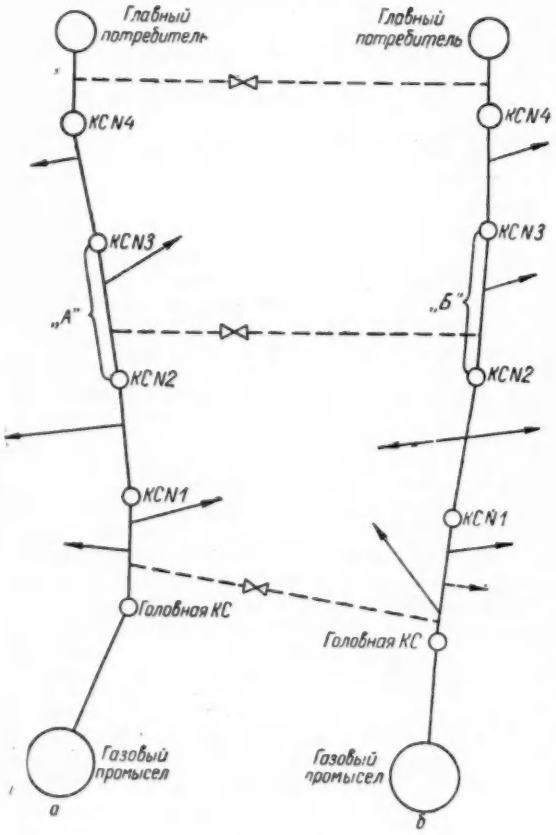


Fig. 2.

Identical legends for the schemes on left and right. Both reading from top to bottom as follows:—

Principal consumer; compressor station No. 4; compressor station No. 3; compressor station No. 2; compressor station No. 1; head compressor station; gas production point.

gas consumption along the section 'A' between the compressor stations No. 2 and No. 3 in the gas grid main on the left drops, the gas pressure in this section rises, the compression ratio for compressor station No. 2 rises and its delivery capacity drops. This leads to a pressure rise in the section between compressor stations No. 1 and No. 2 and in a reduced delivery capacity of compressor station No. 1, and the effect is passed back to the gas production point as a rise in pressure. If the gas is drawn from natural gas wells there will be reduced production.

Downstream of section 'A,' the compression ratio for compressor station No. 3 falls, its delivery capacity rises and the pressure in the following section also rises until a new balance is established at a higher level. The same applies to compressor station No. 4 and the subsequent sections. The overall effect of diminished consumption in any section is therefore a general pressure rise along the whole main and in all the branches with a reduced gas production from the natural gas wells.

Referring now to the gas grid main on the right of Fig. 2, the authors show that an increase in gas consumption in the section 'B' would correspondingly lead to a lower gas pressure along the whole main and to increased gas production at the gas wells. In order to even out the consumption and pressure fluctuations they suggest a number of interlinking connections between two or more grid mains, as indicated by the dotted lines. They claim the following additional advantages for such an interlinked system: (a) A lower aggregate capacity is required for the compressor stations, (b) a greater reliability and continuity of the gas supply, and (c) a better utilisation factor.

* * *

ANOTHER article of interest in this issue is by Mr. P. A. Tesner on the interaction between gases and solid carbon.

A detailed investigation of the experimental results published in the U.S.S.R. and abroad says the author, reveals that the energy of activation of the processes of interaction between gases and solid carbon does not remain constant but drops steadily as the temperature rises. A simple expression has now been derived for the speed of reaction which is valid over a wide temperature range. He shows that a calculation of the energy of activation in accordance with an inclined straight line in Arrhenius' coordinates, leads to gross errors where the energy of activation changes as a function of the temperature; in fact where the energy of activation actually changes by 10%, the Arrhenius formula would show an error of 100%.

The examination he quotes, of the reaction $C+O_2$ is based on measurements by the Central Gas Research Institute and on results published by Mayer, Martin, Klibanova and Frank-Kamenetzky, and are shown graphically by curve 1 in Fig. 3. Whereas at an absolute temperature of 800 to 900°K. the energy of activation E amounts to 40,000 calories per mol, it falls to a few thousand calories at a temperature of 1,300°K.

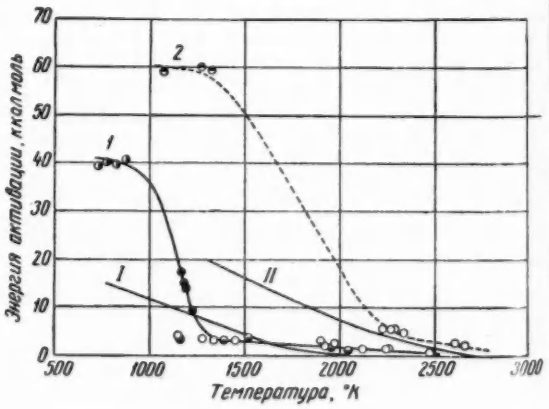


Fig. 3

Ordinate: Energy of activation, in kilo-calories per mol
Abscissa: Absolute temperature in °K.

THE DEVELOPMENT OF THE INDUSTRIAL GAS LOAD IN SCOTLAND

By A. HIGGS, M.Inst.Gas E., M.Inst.F. and
R. W. DEANS, B.Sc., Assoc.M.Inst.Gas E.

THE Scottish Gas Board has functionalised its sales organisation, and has given particular attention to its Technical Advisory Service to industry in order to consolidate existing gas loads and accelerate the rate of development of new business. The cumulative effects of the improved industrial consumer service, and of a reasonably competitive tariff structure, are, it is felt, achieving the desired results.

The value of a planned approach to the development of new industrial business is emphasised by the authors. Knowledge of the location and nature of exploitable loads is a prerequisite to the development of load at the maximum rate, and the partial completion of a survey of industrial potential throughout Scotland has already proved invaluable. In the exploitation of the market, the concentration of effort on coal, anthracite and coke-fired process plant has to date proved the most profitable. Securing conversion from fuel oil firing and from electrical heating requires greater effort, and the evolution of new techniques to increase thermal and production efficiency are needed to render gas competitive.

Survey initiated throughout area

As a preliminary, a comprehensive survey of potential throughout the Board's area has been initiated, and has progressed to some degree, and the approach to securing new business is being made on a planned basis in the light of the information secured. Initially, attention has been directed to producer-fired process plant.

The facilities offered by a number of furnace manufacturers for 'period' training for industrial staff are of considerable benefit, and are being utilised by the Scottish Gas Board for industrial gas engineering staff. In addition, industrial representatives attend refresher courses at the Board's training centre, to ensure that they are briefed for their day-to-day contact work with industrial consumers.

The Board's industrial organisation functions with industrial representation in the field, supported by a comprehensive thermal engineering service. Technical guidance is afforded to industrialists on all aspects of town gas utilisation, and design drawings are furnished where necessary, for prototype equipment, special plant and on conversion from other fuels or electrical energy. The value of this service to load building is emphasised.

While there are reasonably sound grounds for expecting a continuance in the expansion in sales of gas to industry, there is no room for complacency; and for maximum progress, enthusiasm, and the fullest use of the cumulative thermal engineering experience of the industry's industrial engineering staff, the resources of the furnace manufacturers, and the Gas Council research stations, is necessary.

Inherent and exclusive advantages

Gas, as an industrial fuel, has inherent and exclusive advantages; new techniques in application are being evolved; and, in an increasingly competitive market, it is essential that the highest thermal and production efficiency be secured in all new installations. Only by so doing can the maximum rate of expansion of sales be assured.

The industrial board of the Scottish Gas Board has shown an increase in the period 1951 to 1958 from 35.9 mill. therms to 46.4 mill. therms (17.5% and 23.5% respectively of the total gas load). In 1959 there was a fall to 41.2 mill. therms (22.0%) attributable to the general trade recession, which, in some measure still persists in the shipbuilding and heavy engineering industries. The industrial gas consumption in Scotland for year ended March 1959 totalled 41.2 mill. therms, of which ferrous metal manufacturers accounted for 6.7 mill., engineering and shipbuilding 10.6 mill., and food, drink and tobacco 9.9 mill.

The Board reorganised its industrial technical advisory service to industry in October, 1958. An Area Industrial Gas Officer was appointed, and is responsible to the Board for the development of industrial gas sales throughout Scotland. The industrial staff operate under his technical direction.

Supporting technical service to the divisions on special projects is arranged, as necessary, by the Area Officer, utilising the industrial staff resources of the Glasgow and Western Division.

Industrial laboratory facilities are available, with provision for the testing of prototype industrial equipment involving a maximum gas rating of up to 20,000 cu.ft. per hour.

The Board's industrial gas tariff ranges from 30d. per therm for the first 33 therms per quarter, to 14d. per therm

Mr. Higgs is Area Industrial Gas Sales Development Officer, Scottish Gas Board. Mr. Deans is Industrial Gas Sales Officer, Glasgow and Western Division, Scottish Gas Board.

for consumers taking over 500,000 therms per quarter. Load factor discounts of 5% or 10% are also granted according to specified conditions.

The problem of industrial staff training confronts all boards. Obviously, cumulative experience over a period of years is essential to provide the necessary background to convert the new 'graduate' or otherwise 'qualified entrant' into a technical sales engineer with the requisite commercial ability to exploit the industrial market, but much can be done by training courses to impart basic knowledge in respect of selection and layout of controls, and correct installation of plant. Recruitment to the industrial engineering staff is direct from universities and the Heriot-Watt College, Edinburgh, although a number of entrants have selected industrial gas as a career after having passed through the Board's graduate general training course.

The wholehearted co-operation and interest of the furnace-manufacturing industry has contributed substantially to the development of the industrial gas load in all areas. Many new techniques have been developed, and incorporated, in gas-fired plant. The increased use of insulating refractory in the construction of large heat-treatment plant, of improved multiple-burner systems and air/gas ratio control are more and more becoming standard features, materially assisting the development and retention of load.

Installations representative of modern industrial plant are described. The Board's largest gas consumer, Beardmore & Co. Ltd. Glasgow, takes approximately 1,000 mill. cu.ft. per annum of gas for supplying furnaces for large steel castings and forgings for the shipbuilding and heavy engineering industries. Descriptions are given of two bogie hearth furnaces built by Priest Furnaces Ltd., Middlesbrough. These furnaces have internal dimensions of 50 ft. deep × 12 ft. wide across the bogie × 10 ft. high, and 30 ft. deep × 10 ft. wide across the bogie × 10 ft. high respectively.

Multiple burners fitted

Multiple burners are fitted at high and low level, at relatively close centres, to afford the requisite heat input with independent control of top and bottom temperature. Variations in heat demand, occasioned by load, in a vertical direction, can, therefore, be compensated.

Control of temperature longitudinally is achieved in the large furnace by dividing it into three zones, and, in the small furnace, into two zones. The burner systems in these respective zones are manifolded separately to afford independent top and bottom temperature control. Honeywell Brown automatic temperature controllers are employed to control the gas/air input to these separately manifolded burner assemblies.

A 'pressure' at hearth level, to prevent air infiltration, is maintained by a Honeywell Brown automatic pressure controller operating a 30-in. flue damper and sampling from multiple points located in the side walls at hearth level.

Descriptions are also given of ingot-heating Furnaces used by the Dennystown Forge Co. Ltd., Dumbarton, which are now replacing solid-fuel-fired furnaces. Installations for the heat treatment of high quality cast steel rolls at the works of R. B. Tennent & Co. Ltd., Coatbridge are described, in which very precise conditions are essential in relation to temperature distribution. Other large consumers include Stewarts & Lloyds, Ltd., Belshill, where town gas is used for normalising and paint drying of tubes.

The Board has established a comprehensive technical advisory service to potential industrial consumers, and examples are given in the paper showing a great variety of complex problems which have been dealt with and which have ultimately secured loads previously supplied by gas, oil, or electricity. In many cases the solution to the problem has been the conversion of existing producer-gas furnaces to more efficient types using town gas.

DISCUSSION

Mr. H. R. Hart (Deputy Chairman, Scottish Gas Board): It gives me a great deal of pleasure to note that Mr. Higgs and Mr. Dean have jointly been able to tell you something of the work of the development of industrial gas sales in Scotland. We look upon this as something of a report to you of the part that we are playing in the development of industrial gas.

There are comparable bodies with ours such as the Civils, Mechanicals and Chemicals, who hold their meetings, and from time to time the usage of fuel in their industries is discussed, and it is as well that gas is well represented throughout Britain. Gas is spoken of as a valuable fuel by people from every part of Britain attending those meetings. Therein lies the value of this paper.

Mr. A. McNaughton (Beardmore & Co. Ltd.): As the representative of a company using large quantities of gas, I have been personally concerned with the installation of some of the items of plant mentioned; consequently, I have been in frequent touch with both the authors over a considerable period, and though they might not think it, I have a very high respect of the technical capabilities of both. Perhaps I might be permitted to draw attention to a slight error on [p. 12] where it says '70-ton rolls'; that should read '7-ton rolls.' It should also be pointed out that the large Priest and Bayshaw furnaces are capable of a maximum load of 250 tons, while the smaller furnaces can take a maximum of 150 tons.

Fuel for processing and space heating has become a major concern of industry in the post-war era, and in many cases, is one of the largest cost items. Industry is always looking for a fuel which is suitable for the job, readily available, and economic.

Comparing producer gas with town gas, we find that on paper, producer gas is cheaper, despite all the attendant coal haulage, ash disposal, and continuous manning, and is generated for about 10d. per therm as against 1s. 2d. per therm for town gas to a really large consumer. On the other side, one must look further to the efficiency of conversion of useful heat and its precise control in the furnace, the availability of furnaces due to less repairs, less cleaning of mains and flues, and less risk of scrap material; all this can be achieved by employing town gas.

An industrialist does not want to run his own gasworks to make producer gas if he can avoid it; that is really the job of the Gas Board, but he may have to, on economic grounds, if the tariff is not right. I think it is fair to say that, on balance, there is not much in it, and we are supported in this by the fact that we have recently converted our mill soaking pits from produce gas to town gas firing; this was primarily dictated by the necessity to dismantle the producer plant serving them for other development reasons. As far as we can see, the cost of reheating ingots is just about the same.

The Gas Board are to be congratulated on their realistic approach to tariffs two or three years ago, but something more is needed to encourage industry to go further in changing over. The present position is probably one where,

if one is putting in new plant, one would opt definitely for town gas because of its covenience and cleanliness. But to change over existing plant, which may have many years of life ahead of it, involves substantial capital expenditure, and to persuade a board of directors to undertake this, one must be able to show a resulting saving in operating cost. We are not convinced that such is the case at the moment.

However, we are hopeful that, before too long, you may be able to make it so without any question. Surely your new Lurgi plant plus, we hope, the importation of methane, should enable a substantial drop in price to be made. We still have several plants, which many of us would like to see on your fuel, but we are not yet convinced that the capital expenditure involved is justified.

We would congratulate you on the introduction of your industrial service section, and we would encourage you to build this up into a really tip-top organisation capable of giving sound advice and proper efficient designs to your potential customers. Good fuel engineers are scarce today and, as such, command a high remuneration which many firms could not afford to pay, even if they could get them. In view of this, surely, to make the best use of those few who are available is to concentrate them into a central service such as this.

Mr. R. F. Hayman (The Gas Council): I propose to concern myself with two points in connection with conversion of coal burning plants to gas. A conversion is never as satisfactory as the design of new equipment, but it is a short path to increased gas loads. If you look at the figures quoted and look a little further into the prospects, there is rather more to the business of conversion than short term load building. The word conversion to me means not only replacement of solid fuel by gas in an existing plant, but where possible, the more satisfactory solution of a new gas fired plant. In Great Britain, approximately 20 mill. tons of coal are used for industrial processes, excluding iron and steel. The figure for Scotland included in this is about 3 mill. tons. Some 70% of this is used for large scale steam raising which, although most desirable as a load, is at the moment uneconomic with gas. This leaves a figure which, split into the north and south of the Border, becomes a target to be attacked of ¾ mill. tons of coal in Scotland and 8 mill. tons in England and Wales.

Thermal performance in conversions

It is not easy to obtain the maximum possible thermal performance in conversions, and the equivalent gas figures inevitably vary. Results of a range of processes including bread and confectionery baking, heating steel dies and the manufacture of ceramic shapes show that one ton of coal or solid fuel is equivalent to 110 to 180 therms of gas. A conversion factor in common use is approximately 150 therms of gas to one ton of coal, and in a short term conversion this would be a reasonable figure. Allowing for the small industrial areas inaccessible to gas, which we hope will diminish steadily, it means that, for Scotland there is a potential gas load to be captured of something like 100 mill. therms, rather more than twice the present industrial load.

The long term policy of putting down plant designed for a process which would burn less gas than a conversion set would reduce this figure, but the potential on this basis is still 80 million therms. On a similar argument, in England and Wales, there is a minimum potential of 900 mill. therms, some 25% more than the existing industrial load. These figures do not include any assessment of the increase of load due to industrial expansion, a figure on which most forecasts are based.

The capture of a load from coal is, to some extent, based on the desire of managements for a change of fuel brought about by certain kinds of pressure; for instance, government edicts, such as the Clean Air Act, or by changed circumstances in production techniques or by economies of the kind to which we all look forward in being able to offer cheaper gas.

We know, however, that at the present prices of gas, as the authors have admirably shown, it is practicable to compete with solid fuel in many processes. There is enormous cope for load building, but it will not happen by itself. This work needs personal effort, involving staff. The industrial organisation in Scotland is most effective and is rapidly building up, but even now, on the figures given by the authors, it means that one industrial representative is responsible for a portion of the load which brings in a revenue of £100,000. This is not by any means the highest figure per head in the United Kingdom industrial gas sales force, but even this is a figure which is probably rarely achieved in the majority of firms employing sales staff, and it is growing all the time.

Continual vigilance and effort needed

Once a load is contained, it is fought for by the rival fuel interests, and continued vigilance and effort is needed to keep it, quite apart from the effort needed to seek out new loads. This requires a staff which, in numbers and quality, must be commensurate with the increasing responsibilities.

Mr. G. E. Thomas (Eastern Gas Board): The industrial load today represents something like 30% of the gas industry's total sales, and is growing, and what applies to the Scottish Gas Board applies in some measure, greater or less, to all other area boards. The need for highly trained technical men on large scale utilisation was never greater. Today, we are experiencing the most intense competition we have experienced in our entire history in the industrial field—competition from a number of sources, which is gradually whittling away many of the technical advantages which we have enjoyed for so long, and which have helped us to reach our present position. I believe that selling industrial gas is going to become a great deal harder, and short and long term recruitment and training of the right type of men in the field of large scale utilisation are vitally urgent necessities.

The authors' reference to their own organisation and the training methods they have undertaken can to a great extent be reflected in the efforts of other area boards, and I can echo their sentiments and testify to the value of co-operation we have experienced from furnace and plant manufacturers who have absorbed members of my staff for training, but such arrangements are local and, valuable as they have proved, are only a substitute or stop-gap for what could be a nationally co-ordinated post-graduate training scheme.

Industrial gas organisations vary from area to area according to industrial concentrations, geographical and other factors and the organisation described by the authors is closely similar to that at present obtaining in my board where between 70% and 75% of the industrial load and major industrial organisation is concentrated in two out of five divisions and, correspondingly, the bulk of industrial organisation is also concentrated there. Our aim is to get closer integration of our technical service provided by local representation supported by the more specialist service from the two major divisions. Our goal is a personnel strength that will provide coverage of every industrial customer on average twice a year. In practice, of course, many will need a great deal more attention, particularly the larger customers.

Many of us are only too conscious of the fact that for

a very long time too many of our industrial customers have been taking too small a proportion of the load. It appears to be pretty representative that 85% to 90% take only some 10% of our load. Furthermore, published statistics indicate too clearly that while the industrial load is increasing, the number of industrial consumers is decreasing. From 1952 to 1959, it shrunk steadily from 111,800 to 92,400, a reduction of 17½%, which was further evidence of more and more being taken by less and less. Whatever the reasons are for this, we may well ask whether we are not in danger of becoming an industry providing a selective and special heat service rather than a general one. Essential as the attention paid to the heavy individual loads is, it should not take place at the expense of the smaller customer. Limited in number as they are, industrial gas engineers are obliged to give the greater part of their time to the demands of the heavy industrial user, and some extent of what this means is clearly shown in the authors' paper.

Competitive possibilities of town gas

I am particularly concerned with the competitive position of town gas, representing as I do an area which is relatively high priced, and the information which the authors have provided regarding special load factor discounts appears to be a very commonsense approach to the difficult problem of added promotional incentive providing a practical method of easy assessment. I am sorry, however, that little reference has been made to economic factors or to what many consider to be the most serious form of competition facing us at the moment, that from liquid petroleum gases which, apart from consistent uniformity and relative freedom from sulphur, are more than competitive from the price standpoint.

A few references have been made to conversion from producer gas to town gas. It would be helpful to know something of competitive and economic factors. I have had experience of one such conversion where it was shown that 1 therm of town gas gave the equivalent productive results of 1½ therms of producer gas for a mere fraction of capital investment. In other words, town gas at 18d. a therm was competitive with producer gas at 1s. The circumstances of that conversion were such that, because of the intermittent nature of demand, the greater flexibility of town gas enabled us to capitalise and gain a valuable load. I am convinced that we can yet improve on these figures further.

We are also negotiating for one or two other substantial conversions from producer gas but it would be both difficult and unwise to attempt to justify conversion by generalising on one particular experience. It would be helpful, therefore, if the authors could provide additional information on the conversion factor they experienced from a continuance process such as the soaking pits at Beardmore & Co. Ltd. which I think many of us who have had experience of this class of work will testify is indeed a unique achievement.

Mr. R. H. Anderson (Industrial Engineer, North Eastern Gas Board): The authors [p. 20] state that the short path to increased industrial sales lies in the conversion of process plant from other fuels, and they correctly stress the importance of this as the particular plant in question, even under its existing method of firing has, on many occasions, quite an extended life, and if we are to wait for the plant to be written off before attaining this load for gas, many years of valuable consumption can be lost; indeed. it will be true to say, in many instances, that with gas firing, and perhaps some comparatively minor alterations to achieve reduction in heat losses, associated with improved production, may even increase the life of an existing piece of equipment.

The gas industry has, for some considerable time, publicised in the press the aspect of technical advisory service to the industry. Good as this may be, it is of no use unless it is actively followed up by the industrial engineer. We have to prove that we are in a position to give such a service by getting into the factory and constantly offering our services in connection with the improvement of existing plant as well as being prepared to discuss and prepare schemes for efficient conversions from other fuels to gas.

There are many forms of heat application being utilised in industry with standard forms of furnaces, which no doubt in the past have given excellent service, but with the progress made with new methods and materials are not always suitable for such new developments. It is here that the industrial engineers can place before the management concerned, ideas for improvements to meet present-day needs both from a fuel aspect and the handling of work being processed. It is at this stage of the development that projects are referred to the research or development section of a board where such experimental work can be carried out in development laboratories. This will enable finalised designs to be placed before the people concerned and allow them if they so required it, to carry out tests within the Board's laboratories, since to attempt this within a production line or shop can often cause inconvenience. It is by such co-operation and facilities granted to consumers that the press notification of technical services can be forcibly brought home to industry.

Quite recently, a 'Gas at Work in Industry' exhibition was held for the first time in the north, and was considered to be a great success. We were fortunate in having a large area available and were, therefore, able to extend the scope of this exhibition as compared with that recently held in London. With the additional space, it was decided to have a stand devoted to development projects and, on this were shown some 10 or 12 examples. Some had recently been completed and put into practice, and others were still in the stage of further development, while a certain section was devoted to depicting our ideas for the future in model form. There is no doubt that this stand was a source of considerable interest to the majority of people who attended the exhibition. This was borne out by the very many active inquiries for projects shown and for modifications to certain of these projects to meet additional applications of the same techniques.

Great number of enquiries received

Taking the exhibition as a whole, a great number of inquiries were received by the two boards concerned and also, to a smaller degree, from industrialists within other board areas.

I feel in the future that a means will have to be found for readily giving, in the technical press, fuller reports of the successes achieved by the technical advisory service of our industry. Specific inquiries, energetically followed up, open further doors for the use of gas in industry, as has indeed been indicated by the authors in this paper.

Mr. A. E. Tyrrell (Deputy Divisional Manager, Headquarters Division, North Thames Gas Board): I have been greatly impressed by the authors' work and greatly encouraged by the very important successes that they have had. I particularly like the way they have tackled the best prospects first, the conversion of plant on a less suitable fuel and the introduction of control equipment to improve performance and increase overall process efficiency, so important if the plant is to remain on a somewhat more expensive fuel.

The large new installations are even more interesting because of the comparative differences in the cost of the competing fuels.

Even taking into account the favourable tariff structure at high levels of demand, gas remains almost twice the price of a suitable oil. I should like the authors to tell me more about this and how they do it.

The paper is written, with a few words of caution here and there, in an objective and optimistic vein which, in the face of the facts presented, is justified: The increase in the demand for industrial gas in Scotland in 1959-60, for example, which the authors modestly claim to be 6.8%, but which I make over 9%, must surely speak for itself.

The paper will be read by many in our industry and no doubt in others, who cannot do otherwise than conclude that all is well in industrial gas and that while acknowledged difficulties exist, in some remarkable way the industrial staff overcome them.

My admiration for this excellent record of achievement is tinged with a shade of fear: a fear that the less informed, not understanding the severely competitive nature of the market in which we trade, will expect too much from the small band of overworked enthusiasts whose position grows no better with the passage of time.

It was natural, but unfortunate, that the authors should have said so little about competition; indeed, if I may take what was said a little out of context it is implied that well designed gas appliances effectively balance out the disparity in prime fuel costs. How this is done when the price of oil is often half the best price of gas and in some parts of the country, as low as one third of our price offering with it about the same level of services, I simply do not know. To understand competition is the first step to effectively combating it.

In that spirit and without any wish to be unnecessarily depressing, let me tell you what has happened in the past five years. In this period, the demand for oil, not including that used in iron and steel, has gone up by 103%; electricity by 28.4%; gas by 6.9%. The index of industrial production in these five years has risen by 8%.

While much of the increase in the use of oil has been at the expense of coal which has declined by nearly 25%, having largely fulfilled the opportunities in this field, more and more attention is being directed towards us.

At the present moment, I am desperately trying to save loads exceeding 2 mill. therms per annum from the talons of these oleaginous vultures. Somehow, we must escape from this situation in which we spend more and more time holding what we have and too little in expanding our markets.

The gas industry is becoming competitively depressed as the whole demand over the past five years has decreased by 3.8%, and through no fault of its own; indeed, this very competition has made it one of the most efficient industries in the country, and however difficult or disagreeable we may find it, it is against this background which economists call perfect competition, that our future trading will have to be done. Little wonder that many of us are suffering from the new commercial complaint 'price nervousness'.

Situation becomes less serious

The more we learn of our competitors and their methods and terms of trading, the less serious the situation becomes, and the authors' first steps to survey the market are both logical and profitable. I should very much like to know how they went about this and what was revealed.

In my board, we have completed surveys in two industries and we are now at work on a third, and the information that has become available is not only helping us to deal with immediate problems, it is providing the basis for research and development and future promotional activities.

It is part of the survey to study the structure of an industry to find out how it affects the functioning of that industry and its response to demand; its adoption and development of new methods and products and its activity in developing markets both at home and abroad.

What seems important in such studies is that they reveal the tendency to change which may result from the passage of time, or more probably, from the industry progressively or, in some cases, protectively, reacting to rapidly changing industrial conditions. We should keep step with the industrialist in these studies or we shall be in danger of examining the problems too late to capitalise the opportunities they present.

Surveys in any business are the first step to planned market expansion. They stop the hopping from one crisis to the next and provide the means of bringing more ordered priorities to a market where many opportunities are presented. The importance of this work cannot be overemphasised and it is my view that it should be done nationally and not undertaken by each industrial gas engineer as a part-time occupation.

The time-worn practice of poaching each other's staff is but a sympton of the very serious shortage of suitable entrants to this important branch of our business. In the long term, such methods will have a harmful effect. Why not have a national industrial gas school along the lines of the American pattern taking in young men as pupils or apprentices with an assured career in industrial gas? Our promotional plans however good will come to naught without suitable staff to operate them. May I congratulate the authors on the excellent work they are doing in this connection and ask them where they are finding the trainees?

Excellent piece of co-operative work

I like the part the manufacturers are playing in their scheme. It is an excellent piece of co-operative work. The assistance we get from our supporting manufacturers is an important contribution to total effort. Indeed, I sometimes wonder whether we tend to take the easy course and lean too heavily upon them. I should very much like to see a more closely co-ordinated effort between ourselves and the manufacturers, particularly in the development field, with a more positive lead coming from our side. May I again quote the American pattern, no better than ours in many ways, but in development, promotion, advertising and in general marketing of industrial gas we could learn much from their experiences.

In the years that lie ahead, we shall have more serious competitive difficulties to face than ever before; our product is in every respect but price the ideal fuel, and it is sad indeed that for this reason only, the industrialist is often compelled to take a fuel less suited to his needs. Our price setters should study most carefully with the industrial engineer the markets offered by the larger user with their almost ideal characteristics.

Mr. A. G. Jennings (Industrial Gas Officer, West Midlands Gas Board): My only quarrel with the excellent paper which has been presented by the authors is that it has been given on the wrong platform. The paper contains a mass of information indicating what has been done, and what can be done, to improve efficiency and productivity by the use of gas for industrial process heating. Our greatest difficulty is to get this information across to the people who are in a position to place orders for gas in the factory.

This is the sort of paper which, if given to any branch of the Institution of Production Engineers, for example, would cause very considerable favourable comment and would lead to more success in the sale of gas.

May I make a plea that we cease to hide our results

under bushels and to ask that much more publicity should be given. There is enough information in this paper, for instance, to product a bi-monthly bulletin of good news for industrialists for a whole year. I believe that in Birmingham we do more than most in connection with publicity, but even so, we only really touch the fringe of industry. Industrial engineers must be prepared to take an interest in local engineering organisations and places where works managers meet. I am sure that the most satisfactory way of getting these facts across is by personal contact. There may be a case for employing a specialist industrial engineer from Headquarters as a visiting lecturer, but I think if it can be done by the staff who normally meet the people concerned, it is far better.

I was most interested to see how closely the industrial gas organisation in Scotland ties up with that in use in the West Midlands, for it seems to indicate that Mr. Higgs is sufficiently impressed with the results obtained by the Birmingham organisation for him to duplicate to a large extent the system which he played a large part in implementing when he was at Birmingham.

In particular there is no doubt that the idea of providing a first class development and design team at Headquarters to back up the sales engineers in the field, is one which pays very good dividends. A large amount of the load which we have been successful in obtaining, particularly for conversions, would not have been obtained unless the divisional industrial engineers had such a service as we provide to turn to.

Combined industrial design centres

It is not fair to expect the industrial sales engineers, with day-to-day responsibilities for the maintenance of good service to their consumers, to spend the necessary time to develop projects involving a large amount of design. In fact, it may be advantageous in the case of some Boards with much smaller industrial loads, to combine to have a central industrial design centre, in which it would be economic to employ a first class team full time, which would otherwise be difficult to justify in the case of individual areas.

It may in some measure indicate the success of the organisation at Birmingham to say that, last year, the industrial demand increased by 8½ mill. therms, which represents an increased revenue of more than £½ mill.

Mr. W. L. Howe (Chief Technical Officer (Gas Sales), Mersey Group, North Western Gas Board):

There are four essential pre-requisites to the securing of increased industrial load. These are, a qualified industrial engineer of long and varied experience at the head of affairs; a trained and qualified team of assistants, adequate in number, and efficiently organised; an equitable, yet economic tariff for industrial gas; and finally, potential. It is the last and most important of these, which is evidently available in the Glasgow Division of the Scottish Board, not only in number of consumers, but in their individual size and in the obsolescence of much of their furnace plant.

Many of us, with approximately an equal number of consumers, have few old established heavy engineering firms where such massive conversion loans may be secured. In this respect, the authors are to be envied.

As the gas industry moves inevitably towards a greater degree of unity, would not the authors agree that in carrying out any national surveys of potential load, special consideration should be given to those areas where old established industries are sited? That is, to take into account those areas where there are old established heavy industries and give special consideration in regard to staff and facilities in those areas.

The authors have referred, as have so many others, past and present, to the shortage of industrial engineers and to schemes for their recruitment and training. They will agree, I feel sure, that unless these are accompanied by a realistic appreciation of the necessity for retaining those experienced men we still have, such schemes must inevitably prove uneconomic.

Would the authors agree that, if an analysis of the economics of the industrial load, and the profit therefrom, were to be made, and an agreed percentage allocated per therm sold, to cover overhead charges—that is, numbers of staff and their salaries, buildings and facilities and administrative charges—this approach might release such a wealth of enthusiasm among staff that our competitors, in spite of apparent price advantages, would not know what had hit them?

Mr. K. J. Johnson (Industrial Gas Officer, Derby, East Midlands Gas Board): I was interested in the authors' success in conversion of two soaking pits. But their figures for gas consumption per ton of ingot heated, of approximately 27 therms, seem rather high. Thermal requirements generally vary between three and 20 therms per ton. This difference is largely due to variations in the temperature of the charged steel.

The paper makes no reference to control of the atmosphere in the pits with the object of minimising scaling losses. Has the conversion to town gas firing resulted in an improvement; if so, would the authors indicate the percentage scale loss before and after conversion?

In England there are a few electrically heated soaking pits using resistance heating by passing a current of electricity through coke contained in silicon carbide tubes. These tubes are sited round the periphery of the pits and very good results are obtained, particularly with regard to scale formation. Admittedly, these pits were designed more for holding the ingots at rolling temperature then heating from cold or near-cold conditions. Nevertheless, they have been and are used for both purposes. The gas industry must watch this development, otherwise we might find steel mills turning more and more to this method of heating. I suggest that we must look at this matter in the light of a short term and a long term viewpoint.

It may well be that, at the present time, absolute scale-free heating of the ingots in the soaking pits is not required, or, in fact, even desired by the steel producer. However, an immediate reduction of the present level of the scale loss, say from about 2% to 1% or under, would be welcomed. Our short term aim should be to reach this lower level while at the same time we prepare for the day when the steel industry is ready for the introduction of heating methods capable of heating steel ready for the rolls without either scale or surface decarburisation.

Demand for reheating furnaces

There is already a demand for re-heating furnaces that will do just this. The call for quality in all stages of steel manufacture and fabrication will increase. The issue before us is quite a simple one: We either meet the demands of our customer, or lose his business. In this case, our problem is to find, and quickly, ways and means of heating by indirect methods large production furnaces in which steel billets can be heated to temperatures in the region of 1,250°C. without scale formation and, when necessary, without loss of surface carbon.

Some 15 years ago, or perhaps even more recently, electricity was regarded as suitable only for relatively low temperature work. Today, refined heating in controlled atmospheres in excess of 1,200°C. is within the compass of electric furnaces. Admittedly, this is achieved at relatively high cost of element replacement. Nevertheless, electric furnaces are being installed to do this job to the satisfac-

tion of the customer. I would conclude by asking, Are we lagging behind in this class of refined heat treatment?

Mr. H. G. Willes (North Thames Gas Board): It is remarkable that only nine pages of the paper are required to describe a project so formidable as the reorganisation of the industrial section of the Scottish Gas Board. The authors are to be congratulated on their concise, yet precise, account.

There are two questions I wish to ask about the section entitled 'Industrial Gas Organisation'. First, what arrangements have been made to provide an after-sales service for the specialised equipment installed by industrial customers? It is our experience in the North Thames area that not only is a special maintenance service welcomed by most industrial customers, but it also provides a valuable and regular means of gaining information regarding customers' requirements and proposed developments. In fact, the existence of such a service for gas-fired equipment has been known to influence customers to choosing gas for a new plant.

Secondly, I would inquire if an industrial workshop has been provided to permit the local development of original ideas conceived by the Board's engineers, draughtsmen and laboratory staff and in which also small 'one-off' appliances, difficult to obtain elsewhere, can be constructed? Mention has been made of co-operation of furnace manufacturers in development work, of liaison with the Gas Council Research Establishments, and of the availability of £10,000 for the installation of equipment on a 'sale or return' basis. The allocation of this useful sum of money by the Scottish Gas Board must surely be applauded by us all as a bold and progressive step, providing encouragement to the sales staff in seeking new industrial loads. Perhaps the authors will tell us whether they are satisfied that these arrangements permit the full advancement and implementation of their ideas for technical developments, and whether they would like in addition more extensive local workshop facilities enabling them to carry out those 'trial and error' experiments which are so often the source of discovery and invention.

I hope the authors will forgive me if from the large and impressive industrial jobs they have described, I choose for comment the last and perhaps the smallest one, namely, the conversion to gas-firing of the air heater used for wool drying. Presumably, the aerated ring burner was fitted close behind the axial flow fan on the commendable 'trial and error' basis to which I have referred. It does seem surprising, however, that an aerated burner was chosen in view of its known tendency to be unstable when fitted in draughty positions, particularly when thermostatic controls are used as in this case.

Without knowing the construction of the equipment it is difficult to pass judgment on the choice of burner, but the more conventional practice would seem to be the installation of a post-aerated burner of proved stability, such as a Hypact burner, located on the down-stream side of the fan, thereby permitting the impeller to work in a cool and non-corrosive atmosphere. It also would be interesting to know if flame failure and fan failure devices were incorporated in the installation.

EDINBURGH

A.G.M.

PHOTOGRAPHS

From left: Mr. A. J. Banks, Winn & Coales, Mr. H. H. Carey, Woodall-Duckham, Mr. G. Crockett, Mr. F. B. Waller and Mr. W. D. Parker, Winn & Coales.

From left: M. Touwaide with Mr. and Mrs. G. E. Currier.

THE COOKER THAT SELLS ITSELF

Q What's the difference between meat cooked on an open-roasting spit and meat cooked in an oven?

A You'd soon **taste** the difference! Cooking in an enclosed oven is **baking**. Baking destroys the succulent **true** flavour of meat, poultry and game. You can only **roast** on an open spit. That's why only Cannon can give you "Real Roasting".

Q **Real** Roasting?

A Yes. The SuperChef roasts with two kinds of heat:—radiant heat quickly seals in the meat's natural juices while infra-red heat roasts the meat evenly, right through—and you can roast to the **exact** degree preferred.

Q Does spit roasted meat "splatter"?

A Very little. The roasting spit turns **away** from you and any "splattering" is directed against the back plate. In fact most of the surface juices roll around the meat so that it literally bastes itself.

Q Will it roast a large joint?

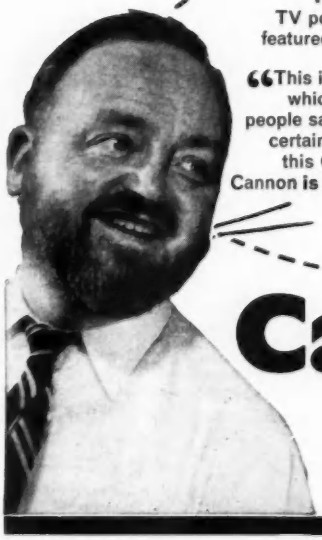
A Perfectly! The SuperChef is designed to cater for a large family. A sirloin of beef, leg of pork, shoulder of lamb, chicken, turkey, ham, game birds—the SuperChef roasts them all to a turn. And in a matter of seconds the Roasting Spit can be folded away and the Versatile, Large-Capacity Foldaway Grill is ready for use.

Q Is it **simple** to use?

A Yes, and it is quicker, cleaner and far superior to oven cooking. Because it is **real** roasting it retains all the **natural** juices and flavour of the joint.

Q Is it easy to clean?

A The Cannon open-roasting spit is wipe-over cleaned in less than a minute.



PHILIP HARBEN, well-known TV personality and authority on cooking, featured in Cannon Cooker advertising says

"This is the first and only domestic cooker on which meat can be **roasted**. As more people savour the delights of real roasting, I am certain that an ever-increasing demand for this Cannon Cooker is bound to follow. Cannon **is** Britain's First **Complete** Gas Cooker."

Cannon

with SUPERCHEF OPEN-ROASTING SPIT and GRILL

Cannon (GA) Ltd., Deepfields, Bilston, Staffs.

Manchester and District Section I.G.E., Chairman's Day

NORTH WESTERN BOARD SHOULD MAKE BIG PROFIT IN 1962

NEWS SUPPLEMENT

'IF we hold prices, go out and sell and keep ourselves on our toes technically on such things as clean gas I think there will be little difficulty in maintaining and improving our position next year, and in 1962 I shall be surprised if we do not make about £1 mill. profit.' The Chairman of the North Western Gas Board, Mr. D. T. Welman, said this on Chairman's Day of the Manchester and District Section of the I.G.E.

Mr. Welman said that although the Board's accounts for the last two years showed a 'thumping loss,' examined realistically there was a betterment of £500,000 in internal trading efficiency last year.

When a setback occurred and demand fell, it was not sound policy to turn to the people who were buying the product to pay the difference.

Will hold prices

The Board had said that subject to there being no major increase in costs from outside, over which they had no control, they would hold prices this year. Although holding prices called for considerable internal economies and although he could not say at this stage how they were doing he would back the Board with all he had to achieve its target.

But having got by this year what was going to happen next year and the year after that? Were they again going to be asked to engage in a similar exercise and pull the belt tighter still?

Mr. Welman went on to explain the importance of steady prices if the Board was to exploit the opportunities in the domestic, commercial and industrial markets. On the domestic side they had something worthwhile to sell in gas central heating in three different forms.

If the price was right domestic central heating could not fail to improve the therms per consumer per annum. This could create a bright position in the domestic market, but everything depended on being competitive with oil. In the north west gas was competitive with oil in the house heating market.

Commerce and industry

On the commercial side the number of consumers had been maintained. Users knew the advantages of gas and were prepared to pay for it, but they were not prepared to pay a lot more. Somehow in this section of the market prices must be brought down. There were wonderful opportunities in the industrial field. With clean gas at a lower price there would be much greater openings than there were today.

During the proceedings Mr. W. Hodkinson, Deputy Chairman of the Board, was invested with the Chairman's badge of office by the immediate past chairman

Continued on p. 72.

The new Chairman of the Manchester and District Section of the Institution of Gas Engineers, Mr. W. Hodkinson O.B.E., *presented the immediate past chairman, Mr. Alan Nicholson, with a portable radio set as a mark of esteem from the members of the Section. Our picture shows, from left: Mr. D. P. Welman, Chairman of the North Western Gas Board; Mr. W. Hodkinson; Mr. Alan Nicholson and Mr. T. C. Battersby, Senior Vice President of the Institution.*

Clean Air Society warn against efforts to boost raw coal

OVER 1 mill. tons of smoke are poured into the air every year by domestic fires compared with 500,000 by industry and 100,000 by the railways. On the other hand domestic chimneys contribute only 100,000 out of the 900,000 tons of grit and dust emitted.

These are just two of the facts about air pollution and the campaign against it contained in the National Society for Clean Air's *Clean Air Year Book* published recently.

According to the historical section in the handbook, Queen Elizabeth I was 'greately greved and anoyed with the taste and smoke of the sea-cooles' in 1578. But the beginnings of the struggle against air pollution are traced back to 1273, when the use of coal was prohibited in London as being prejudicial to health.

Useful digests of information about the Clean Air Act are given and there is a list of operating and approved control areas and smokeless zones. The Hayes and Harlington district in Middlesex far outstrips even the big cities in this respect, having a smoke control area of 2,280 acres out of a national total of 14,000.

The Society's annual report for 1959, which is included in the year book, mentions the success of the international conference it organised last October to mark its Diamond Jubilee. Among the 1,000 delegates attending were 180 representing 31 different countries.

The report expresses concern at efforts being made 'to restore the deservedly waning popularity of the raw coal open fire' and emphasises that 'the drive for clean air is not a drive against coal but simply for its use in newer, cleaner and more efficient ways.'

The year book can be obtained from booksellers or direct from the Society at Palace Chambers, Bridge Street, London, S.W.1, at 2s. 4d. post-free.

Foreign news flashes

Russian engineers report on gas deposits for Brazilian company

FOLLOWING a report by Russian engineers, contracted by Companhia Industrial de Rochas Betuminosas in Pindamonhangaba to survey the bituminous shale deposits in Mombaça, Brazil, it has been announced that the deposits could supply gas for 200 years to the valley of Paraiba, São Paulo, and Rio de Janeiro. The company is contracting foreign engineers to design a big gas plant.

* * *

Industrias Reunidas, Peru, has announced an agreement with a U.S. company under which the Peruvian firm will manufacture gas and electrical appliances under licence and receive technical assistance from the U.S. company. Technicians from Industrias Reunidas are now receiving training in the U.S.A.

* * *

The German company of Heinrich Koppers GmbH, of Essen, which manufactures gas works, coking plants, refineries, synthetic gas plants, and other chemical production installations, has established Nippon Koppers Yugen Kaisha. The new company, situated at Tokyo, will run the Koppers interests in the Far East.

* * *

According to a report from Mr. R. W. Ambrose, drilling superintendent for B.P. Shell and Todd Petroleum Development Ltd., drilling for oil in the Mangaone Valley, near Gisborne, on the east coast of New Zealand's North Island, may be started about the end of this month. Mr. T. L. Harland, administration manager of B.P. Oil Exploration (N.Z.) Ltd., reports that the geological survey of Marlborough (South Island) is to be resumed shortly.

The land over which this company has oil prospecting rights extends from Lake Grassmere to the Clarence River. Previous geological investigations took place in the Ward and Ure River areas where surface indications of oil and gas have been noted for many years. Harland said that investigations would be more intensive than those conducted two years ago, and might lead to a seismic survey later in the year.

PROFIT FORECAST

from p. 71

of the section, Mr. A. H. Nicholson, General Manager, Manchester Group.

Mr. Hodkinson then handed Mr. Nicholson the past president's jewel and also a transistor radio as a token of members' esteem and appreciation of service.

In reply, Mr. Nicholson said he was now in his 12th year in continuous office in the section. He was secretary for eight years, then junior vice chairman, senior vice chairman, chairman and now immediate past chairman.

Denton new works, which was visited by the members of the Section, is one of the outstanding works in the north west. Station Engineer, Mr. N. F. Riches and his staff are well accustomed to showing distinguished visitors around. On the day prior to the gas engineers' visit a civic party from Villefranche, France, inspected the works. They were on a goodwill visit to Denton and were accompanied by the town's civic leaders.

Architects to design all-gas show house

THE Scottish Gas Board is offering architects a first prize of £250 for the design of a small all-gas house which will demonstrate to local authorities, builders and the public the advantages of gas as a fuel. Second and third prizes are £150 and £76.

The house is to cost not more than £4,000 when produced as part of a scheme involving a substantial number of similar dwellings. It must be able to accommodate a married couple with two schoolchildren, a girl and a boy, and the occasional guest, but flexible enough to be adapted to varying family needs. It is not to be a showroom of as many forms of gas services as can be demonstrated, but a stimulating and imaginative house that shall be the best value for money and in which all the major services except lighting shall be gas.

COMING EVENTS

July 18.—WEST MIDLANDS G.C.C.: Conference Room, Gas Offices, Edmund Street, Birmingham 3.

July 26.—SOUTH EASTERN G.C.C.: Caxton Hall, Westminster. 2.30 p.m.

The North Thames Gas Board's two safest drivers, Mr. M. C. Gruber (left) and Mr. H. J. Pidmore (right), who both have 35 years of accident-free driving.

Recognition for safe drivers

ALMOST 150 Southern Gas Board drivers from the Reading and Oxford districts have been presented with awards for safe driving. The awards were handed to them by Dr. A. E. Haffner, Chief Engineer to the Board.

Main awards went to F. Smith (16-19 years), R. Marlow (11-14 years) and W. C. Appleton, C. Beecham, H. T. Chandler, R. C. Jellett, G. King, F. G. Smith and D. V. Spong (10 years).

Almost 11¼ million miles in and around London and the Home Counties have been covered during the past year by drivers of the North Thames Gas Board. During the period 616 of the Board's drivers were accident-free, and so qualified for awards in connection with the safe driving competition sponsored by the Royal Society for the Prevention of Accidents. Many of these 616 drivers have achieved records of 5, 10, 15, 20, 25, 30, and in the case of two men, 35 years of safe driving.

CJB WIN CONTRACT

THE contract for the construction of a further stage of the Scottish Gas Board's supergrid has been awarded to Constructors John Brown Limited. The contract involves the installation of 46 miles of welded steel pipeline in varying sizes up to 12 in. diameter through Ayrshire and Fife. Construction commenced in May.

CASH AWARDS TO BOARD EMPLOYEES

THREE East Midlands Gas Board employees have received awards under the Gas Council suggestions scheme.

Mr. A. Howe, a foreman mechanic at Car House works, Rotherham, received £20 for his suggestion that fibre-cord wire rope be used as a substitute for a chain on a coke-skip driving mechanism.

Mr. H. Strickland, a scaffolder at Northampton, also received £20 for suggesting that a covered shute be used for the removal and screening of catalysts in oil-gas plants.

A cheque for £10 was presented to Mr. E. Hall, an oil-gas operator at Meadow Hall works, Sheffield, whose suggestion was that a lock be fixed on the burner heads at oil-gas plants.

PERSONAL NOTES

MR. A. STEPHENS has rejoined Honeywell Controls Ltd. as Senior Flow Engineer at the company's Greenford (Middlesex) head office. Mr. Stephens' extensive experience of flow and other instrumentation includes two years with Humphreys & Glasgow Ltd. on the Chesterfield underground gasification project. MR. R. W. H. VIVIAN has been appointed at the Greenford head office to specialise on application engineering, using the company's electric miniature instrumentation which is being introduced this year in the United Kingdom. Mr. Vivian will shortly leave this country for a brief study of United States experience in this field.

MR. R. B. GARSIDE, of the Wales Gas Board headquarters staff, has been appointed to the post of Deputy General Manager of the Shiraz Natural Gas Supply Authority and will be taking up his new appointment in August. This is a new project sponsored by the Iranian Government to develop gas supplies to the city of Shiraz. Mr. Garside was formerly engineer and manager of the Thornton Cleveleys gas undertaking for many years, a position he relinquished to take up an appointment in Pakistan on natural gas supplies in 1955.

MR. J. E. BISHOP has been appointed General Sales Manager of the Pulsometer Engineering Co. Ltd. and Joseph Evans & Sons (Wolverhampton) Ltd., designers and manufacturers of pumps and pumping plant, of Reading and London. Mr. Bishop, who took up his new duties at the beginning of June, has had wide experience of the pump industry. After receiving his training with Gwynnes Pumps Ltd., he held appointments with the Permutit Co. Ltd. and Worthington Simpson Ltd. before becoming Sales Manager for Sigmund Pumps Ltd. and subsequently General Manager of Lee Guinness Ltd.

MR. J. D. D. MORGAN and DR. L. M. WYATT were appointed to the Research Board at a recent meeting of the Council of the British Welding Research Association. Mr. Morgan is with the General Chemical Division of Imperial Chemical Industries Ltd., and is the Chairman of the I.C.I. welding panel. Dr. Wyatt is the Chief Metallurgist of the Central Electricity Generating Board.

MR. A. G. F. R. WHITE, Senior Technical Assistant at Burton-on-Trent Gasworks, has been elected to the Council of the Institute of Executive Engineers.

MR. A. E. WILLIAMS has been appointed Gas Manager and Engineer to the Palmerston North City Council New Zealand.

OBITUARY

BRIGADIER C. A. H. FAIRBANK, O.B.E., M.C., T.D., former managing director of George Glover & Co. Ltd., in the Radiation group of companies, died recently aged 68. Following the first world war, in which he reached the rank of major, and a period of service with a firm of consulting engineers, he joined Radiation Ltd. in 1934 and worked in the London sales department of Richmonds Gas Stove Company. At the beginning of the second world war he commanded anti-aircraft defences in different parts of the country, and during the landings in Algiers and the whole of the subsequent campaign was in charge of British and American anti-aircraft defences. Brigadier Fairbank was appointed managing director of George Glover & Co. Ltd. on his return to England in 1943 and held the post until 1950.

MR. E. C. MENGEL, who was associated with Humphreys & Glasgow Ltd. until his retirement in 1955, died recently at the age of 81. His association with the firm covered more than fifty years. He was a director of Economical Gas Apparatus Construction Co. Ltd. when he first met Dr. Glasgow, one of the founders of Humphreys & Glasgow, in the early 1900's. His formal appointment to the board of the company was in 1925, and he succeeded Dr. Glasgow as chairman in 1952.

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